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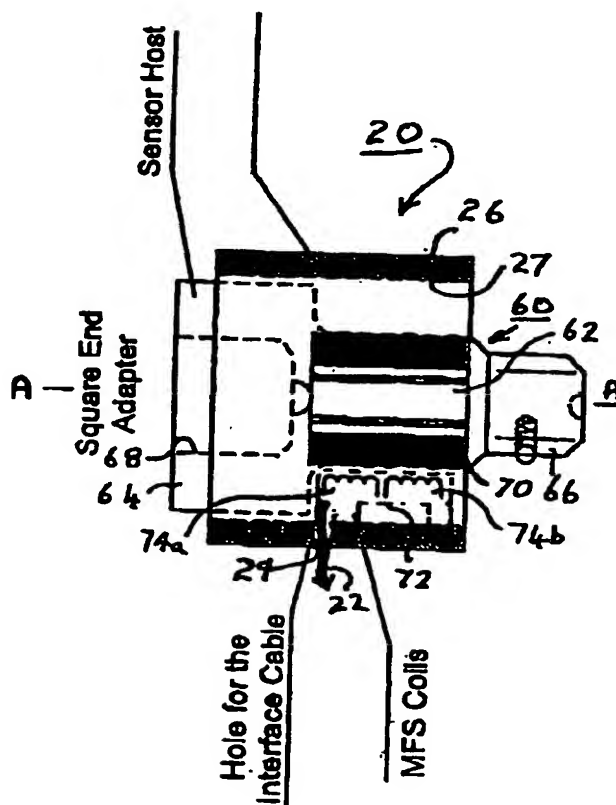
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[Continued on next page]

(54) Title: TORQUE SENSOR ADAPTOR



(57) Abstract: The invention relates to a torque transducer assembly and to a torque transducer incorporating such an assembly. The invention has particular application to measuring torque in a fastening tool in which torque is generated in pulses and to measuring torque in an adaptor mountable to a pulsed-torque type of fastening tool.

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GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/09349

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 B25B23/14 G01L3/10 H02K35/02

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B25B G01L H02K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 911 119 A (ATLAS COPCO TOOLS AB) 28 April 1999 (1999-04-28) column 3, line 3 - line 27; figure 1	1-4,6-8, 10,11
X A	DE 196 38 191 A (KESSLER KARL H) 26 March 1998 (1998-03-26) column 1, line 13 - line 23 column 1, line 43 - line 49; claims 1,5; figure 1	1,2,6,7 8-10,22
X A	US 4 918 997 A (POUILLANGE JEAN) 24 April 1990 (1990-04-24) column 1, line 6 - line 32; figure 1	1,2,6,7 8-10,22
P,X	DE 102 17 416 C (GEILENBRUEGGE IVO) 31 July 2003 (2003-07-31) claims 1,12; figures	1,2,6-9
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
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- \*P\* document published prior to the international filing date but later than the priority date claimed

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- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

18 February 2004

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27 FEB 2004

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/09349

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 196 071 B1 (SHOMO ROBERT D) 6 March 2001 (2001-03-06) column 1, line 51 - line 62 column 3, line 29 - line 42 abstract; figures ---	1,2,6-8, 10,22
A	US 5 315 501 A (WHITEHOUSE HUGH L) 24 May 1994 (1994-05-24) column 3, line 30 - line 33; figure 1 ---	1,10,22
A	US 5 898 379 A (VANBERGEIJK ERNST) 27 April 1999 (1999-04-27) abstract; figure 1 ---	8
A	US 2002/020538 A1 (GIARDINO DAVID A) 21 February 2002 (2002-02-21) cited in the application page 2, paragraph 30; figure 1 ---	1,22
X	US 5 975 714 A (PLATT JAMES VICTOR ET AL) 2 November 1999 (1999-11-02) column 1, line 45 -column 2, line 3 column 3, line 9 -column 3, line 21 column 3, line 56 -column 3, line 65 column 4, line 39 -column 4, line 40 figures 1,2,5 ---	12-20
A	US 3 448 305 A (RAYNAL JEAN ET AL) 3 June 1969 (1969-06-03) column 1, line 14 -column 1, line 24 figures ---	21
A	US 5 982 059 A (ANDERSON MARTY J) 9 November 1999 (1999-11-09) column 1, line 12 -column 1, line 15 column 2, line 26 -column 2, line 40 figure 1 -----	21

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/09349

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,  
no additional fees are to be refunded.

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

**1. Claims: 1-11, 22-24**

Torque transducer assembly with a housing surrounding a shaft extending therethrough, a magnetic field sensor assembly being incorporated within the housing

**2. Claims: 12-21**

Electrical power generator, involving a permanent magnet moving back-and-forth through a coil winding, thereby generating e.m.f.s. in the coil and a rectifier arrangement

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/09349

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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